

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 December 2003 (31.12.2003)

PCT

(10) International Publication Number
WO 2004/000966 A1

(51) International Patent Classification⁷: C09J 163/00,
H01L 21/00, C09J 11/00

(74) Agents: HARTS, Dean M., et al.; Office of Intellectual
Property Counsel, Post Office Box 33427, Saint Paul, MN
55133-3427 (US).

(21) International Application Number:

PCT/US2003/019712

(22) International Filing Date: 23 June 2003 (23.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

2002-183277 24 June 2002 (24.06.2002) JP
2002-267115 12 September 2002 (12.09.2002) JP

(71) Applicant (for all designated States except US): 3M IN-
NOVATIVE PROPERTIES COMPANY [US/US]; 3M
Center, Post Office Box 33427, Saint Paul, MN 55133-
3427 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): TAKEUCHI, Shoji
[JP/JP]; 16-8-304, Yabe 4-chome, Sagamihara,, Kanagawa
229-0032 (JP). KAWATE, Kohichiro [JP/JP]; 8-13-12,
Tamagawagakuen, Machida,, Tokyo 194-0041 (JP).
SAKAKIBARA, Makoto [JP/JP]; 128-163, Kawamachi,
Hachioji,, Tokyo 193-0321 (JP).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG,
US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: HEAT CURABLE ADHESIVE COMPOSITION, ARTICLE, SEMICONDUCTOR APPARATUS AND METHOD

(57) Abstract: Provided are a heat curable adhesive composition and an adhesive article suited for dicing of a semiconductor and die-bonding of the diced semiconductor chip, and a semiconductor apparatus and a process for preparing a semiconductor apparatus using the adhesive composition and article. In one embodiment, the present invention provides a heat curable adhesive composition comprising a caprolactone-modified epoxy resin and a tack reducing component. Another embodiment of the present invention provides an adhesive article comprising a heat curable adhesive layer of a heat curable adhesive composition comprising a caprolactone-modified epoxy resin, a tack reducing component, and a backing layer carrying said adhesive layer on at least a portion of the backing layer.



WO 2004/000966 A1

INTERNATIONAL SEARCH REPORT

National Application No

PCT/US 03/19712

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C09J163/00 H01L21/00 C09J11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C09J H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, CHEM ABS Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 09, 4 September 2002 (2002-09-04) & JP 2002 146319 A (THREE M INNOVATIVE PROPERTIES CO), 22 May 2002 (2002-05-22) cited in the application abstract	1-8
Y	US 4 521 570 A (INOUE KIMIO ET AL) 4 June 1985 (1985-06-04) * whole document * column 7, line 7 - line 30 column 8, line 4 - line 14	1-8
Y	EP 1 167 483 A (SAEHAN IND INC) 2 January 2002 (2002-01-02) page 2, line 50 -page 3, line 58	1-8

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

15 September 2003

Date of mailing of the international search report

22/09/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Marsitzky, D

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/19712

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2002146319	A	22-05-2002	NONE	
US 4521570	A	04-06-1985	JP 1477327 C	27-01-1989
			JP 57209921 A	23-12-1982
			JP 63020252 B	27-04-1988
			JP 1456956 C	09-09-1988
			JP 58032628 A	25-02-1983
			JP 63006087 B	08-02-1988
			GB 2101605 A ,B	19-01-1983
EP 1167483	A	02-01-2002	EP 1167483 A1	02-01-2002